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Chairman Ajit Pai & Commissioners
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

REF: WT Docket No. 16-239 (Amateur Radio Symbol Rate NPRM), RM-11708, & RM-11759; The Amendment of Part 97 of the) Commission's Amateur Radio Service Rules) to Permit Greater Flexibility in) Data Communications.

RECOMMEND APPROVAL: I fully support the position of the Amateur Radio Safety Foundation, Inc. (ARSFI) and the American Radio Relay League (ARRL) as written (in reference to WT Docket No. 16-239, RM-11708, & RM-11759); further, I urge the FCC to approve and adopt the proposed rule changes that abandon HF spectrum regulation by symbol rate and instead, regulate HF spectrum by bandwidth. The HF symbol rate limitation in § 97.307(3) should be removed.

The current method of regulating HF spectrum using digital symbol rate is obsolete and is actually preventing development of faster, more efficient digital waveforms, modes and capabilities, using the same spectrum bandwidth. Many individuals are misinformed about what impact that ARRL's proposal will have. Some individuals believe that there will be increased interference to existing users of the same spectrum---not true. Still others believe that weak signal modes or CW will be negatively impacted---also not true. ARRL's proposal is about the greater problem that existing Part 97 regulation is causing, that of restricting the development and use of other digital waveforms for use on amateur radio spectrum. It's not a proposal surrounded only about Pactor-4.

Abandoning regulation of digital HF spectrum using symbol rates will enable further advancements and innovations in digital communication technologies. Pactor-4 is using essentially the same bandwidth as Pactor-3 does that now already exists on the Amateur Radio spectrum. The bandwidth of Pactor-3 and Pactor-4 are nearly the same, yet Pactor-4 provides for a significantly increased data throughput because of the higher symbol rate. Comparison of the ITU Emission Designators for Pactor-3 and Pactor-4 are:

- **Pactor-3 is 2K20J2D** (at a symbol rate of 100 symbols per second).
- **Pactor-4 is 2K40J2D** (at a symbol rate of 1800 symbols per second).

As one can see, using Pactor-4 will not utilize any significantly more spectrum than does Pactor-3. Yet currently, Pactor-4 is not permitted on FCC controlled amateur radio spectrum because its symbol rate exceeds the current regulatory limit. It is the increased symbol rate that gives Pactor-4 and other digital modes greater throughput. Dropping regulation by symbol rate will permit this highly efficient digital waveform to be utilized in HF spectrum assigned to the amateur radio community, using the essentially the same bandwidth now used for Pactor-3.

Equally important is that by abandoning regulation by symbol rate, amateur radio operators will be permitted to employ other exciting, highly efficient digital modes that are now in use by the U.S. Government and military (e.g. waveforms defined in MIL-STD-188-110A, -110B, and -110C) or new experimental digital waveforms. Many of the Military Standard waveforms are much more efficient, robust, and offer greater throughput than other digital modes used now by amateur radio operators. Not only would removing regulation by symbol rate permit the use of these other digital modes but encourage further development of digital waveforms by amateur radio operators. Other digital waveforms that use higher symbol rates, other than existing MIL-Standard or Pactor-4 waveforms, could be developed and experimented with if the symbol rate restriction is lifted.

Regulation of amateur radio HF spectrum by bandwidth instead regulation of spectrum by symbol rate makes technical sense. I strongly encourage the FCC to delete regulation of spectrum by symbol rate and support the positions of ARSFI and the ARRL, and the ARRL's proposal in its entirety.

Respectfully & 73,

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